

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently Amended) An injection molding hot runner nozzle comprising:

a nozzle having a nozzle body with a melt channel extending from a ~~head-portion~~ first portion to a tip portion thereof;

at least one electric heater, said at least one electric heater ~~wrapped~~ wound spirally around and embedded within said nozzle body from the ~~head-portion~~ first portion to the tip portion thereof to provide heat to said melt channel; and

at least one temperature sensor, said at least one temperature sensor ~~wrapped~~ wound spirally around and embedded within said nozzle body from the ~~head-portion~~ first portion to the tip portion thereof to sense a temperature of said melt channel.

2. (Original) The injection molding hot runner nozzle according to claim 1, wherein said at least one temperature sensor is a thermocouple.

3. (Currently Amended) The injection molding hot runner nozzle according to claim 1, wherein said at least one electric heater and said at least one temperature sensor are wrapped around substantially the same portion of said nozzle body in a substantially similar path.

4. (Currently Amended) The injection molding hot runner nozzle according to claim 1, wherein said at least one electric heater ~~is radially displaced from~~ and said at least one temperature sensor are equidistant from a centerline of said melt channel.

5. (Original) The injection molding hot runner nozzle according to claim 1, wherein said at least one electric heater and said at least one temperature sensor are separated by a dielectric material with good heat conductance.

6. (Currently Amended) An injection molding system comprising:
- an injection manifold having at least one manifold melt channel;
 - at least one injection molding nozzle having a nozzle body with a nozzle melt channel in fluid communication with said at least one manifold melt channel;
 - at least one heater wire element spirally wound around substantially the length of said nozzle body from a ~~head-portion~~ first portion to a tip portion thereof; and
 - at least one thermocouple wire element spirally wound around substantially the length of said nozzle body from the ~~head-portion~~ first portion to the tip portion thereof, wherein said thermocouple wire element is longitudinally adjacent to said heater wire element.
7. (Currently Amended) The injection molding system according to claim 6, wherein said at least one heater wire element and said at least one thermocouple wire element are ~~spirally wound directly onto an outer surface of~~ embedded in said nozzle body.
8. (Currently Amended) The injection molding ~~hot-runner nozzle~~ system according to claim 6, wherein said at least one heater wire element ~~is radially displaced from~~ and said at least one thermocouple wire element are equidistant from a centerline of said melt channel.
9. (Original) The injection molding system according to claim 6, wherein said at least one heater wire element and said at least one thermocouple wire element are separated by a heat conductive material.

Claims 10 - 15 are cancelled.

16. (Currently Amended) An injection molding apparatus:

a hot runner nozzle having a nozzle body and a melt channel extending from a ~~head portion~~ first portion to a tip portion;

an electrical heater wire element wrapped around said melt channel from the ~~head portion~~ first portion to the tip portion; and

at least one thermocouple wire element wrapped around said melt channel from the ~~head portion~~ first portion to the tip portion, wherein said thermocouple wire element is longitudinally adjacent to said heater wire element, whereby the electrical heater wire element and the at least one thermocouple wire element are each sandwiched in a dielectrical material.

17. (New) The injection molding apparatus according to claim 16, where said electrical heater wire element and said at least one thermocouple wire element are embedded in the nozzle body.

18. (New) An injection molding apparatus comprising:

a nozzle having a nozzle body with a melt channel extending from a first portion to a tip portion thereof;

at least on electric heater, said at least one electric heater wound spirally around said nozzle body from the first portion to the tip portion thereof to provide heat to said melt channel;

at least one temperature sensor, said at least one temperature sensor wound spirally around said nozzle body from the first portion to the tip portion thereof, wherein said at least one electric heater and said at least one temperature sensor are equidistant from a centerline of said melt channel.

19. (New) The injection molding apparatus according to claim 18, wherein said at least one heater wire element and said at least one thermocouple wire element are embedded in said nozzle body.

20. (New) An injection molding apparatus comprising:

a nozzle having a nozzle body with a melt channel extending from a first portion to a tip portion thereof;

at least one electric heater, said at least one electric heater wound spirally around said nozzle body from the first portion to the tip portion thereof to provide heat to said melt channel;

at least one thermocouple wire element, said at least one thermocouple wire element wound spirally around said nozzle body from the first portion to the tip portion thereof, wherein said at least one thermocouple wire element winds around said nozzle body a plurality of times.

21. (New) The injection molding apparatus according to claim 20, wherein said at least one heater wire element and said at least one thermocouple wire element are embedded in said nozzle body.

22. (New) The injection molding apparatus according to claim 20, wherein said at least one heater wire element and said at least one thermocouple wire element are equidistant from a centerline of said melt channel.

23. (New) The injection molding apparatus according to claim 20, wherein said at least one heater wire element and said at least one thermocouple wire element are separated by a heat conductive material.